II. CLAIM AMENDMENTS

1-35 (Cancelled)

36. (New) A neuro-ventilatory efficiency computation method for monitoring/controlling a level of ventilatory assist to a patient comprising:

receiving an EMG signal intensity representative of inspiratory effort of the patient

receiving a lung volume value representative of a lung volume of the patient

determining from the received EMG signal intensity and lung volume value at least one of the two following relations:

an EMG signal intensity for a given lung volume value, the received lung volume value then being said given lung volume value ; and

a lung volume value for a given EMG signal intensity, the received EMG signal intensity then being said given EMG signal intensity ; and

increasing or decreasing the ventilatory assist level depending on whether said at least one relation has increased or decreased by at least a given percentage.

37. (New) A neuro-ventilatory efficiency computation method as defined in claim 36, wherein:

increasing or decreasing the ventilatory assist level comprises increasing the ventilatory assist level by a preset increment when said at least one relation has increased by at least said given percentage.

38. (New) A neuro-ventilatory efficiency computation method as defined in claim 36, wherein:

increasing or decreasing the ventilatory assist level comprises increasing the ventilatory assist level by a preset increment when said at least one relation has increased by at least said given percentage until the EMG signal intensity for the given lung volume value is restored to a predetermined, preset value.

39. (New) A neuro-ventilatory efficiency computation method as defined in claim 36, wherein:

increasing or decreasing the ventilatory assist level comprises decreasing the ventilatory assist level by a preset decrement when said at least one relation has decreased by at least said given percentage.

40. (New) A neuro-ventilatory efficiency computation method as defined in claim 36, wherein:

increasing or decreasing the ventilatory assist level comprises decreasing the ventilatory assist level by a preset decrement when said at least one relation has decreased by at least said given percentage until the EMG signal intensity for the given lung volume value is restored to a predetermined, preset value.

41. (New) A neuro-ventilatory efficiency computation method as defined in claim 36, wherein increasing or decreasing the ventilatory assist level comprises:

increasing the ventilatory assist level by a preset increment when said at least one relation has increased by at least said given percentage; and

decreasing the ventilatory assist level by a preset decrement when said at least one relation has decreased by at least said given percentage.

42. (New) A neuro-ventilatory efficiency computation method as defined in claim 36, further comprising:

generating an alarm when said at least one relation has increased or decreased by the given percentage.

43. (New) A neuro-ventilatory efficiency computation method as defined in claim 36, further comprising:

manually adjusting the ventilatory assist level in response to a signal from the operation of increasing or decreasing the ventilatory assist level.

44. (New) A neuro-ventilatory efficiency computation method as defined in claim 36, wherein:

determining at least one relation comprises calculating one of the following values of the EMG signal intensity or lung volume value: a mean of the EMG signal intensity or lung volume value, a median the EMG signal intensity or lung volume value, and a peak the EMG signal intensity or lung volume value.

45. (New) A neuro-ventilatory efficiency computation method as defined in claim 36, wherein the EMG signal intensity is a patient's diaphragm EMG signal intensity.

46. (New) A neuro-ventilatory efficiency computation method as defined in claim 36, comprising:

calculating a trend in the EMG signal intensity for a given lung volume value using an adjustable time base.

47. (New) A neuro-ventilatory efficiency computation method as defined in claim 36, comprising:

calculating a trend in the lung volume value for a given EMG signal intensity using an adjustable time base.

48. (New) A neuro-ventilatory efficiency computation method as defined in claim 36, comprising:

limiting a range of the ventilatory assist level within a safe range.

49. (New) A neuro-ventilatory efficiency computation device for monitoring/controlling a level of ventilatory assist to a patient comprising:

a first input for receiving an EMG signal intensity representative of inspiratory effort of the patient;

a second input for receiving a lung volume value representative of a lung volume of the patient;

connected to the first and second inputs a calculator of at least one of the two following relations:

an EMG signal intensity for a given lung volume value, the lung volume value received on the second input then being said given lung volume value; and

a lung volume value for a given EMG signal intensity, the EMG signal intensity received on the first input then being said given EMG signal intensity; and

a controller connected to the first unit, the controller increasing or decreasing the ventilatory assist level

depending on whether said at least one relation has increased or decreased by at least a given percentage.

50. (New) A neuro-ventilatory efficiency computation device as defined in claim 49, wherein:

the controller increases the ventilatory assist level by a preset increment when said at least one relation has increased by at least said given percentage.

51. (New) A neuro-ventilatory efficiency computation device as defined in claim 49, wherein:

the controller increases the ventilatory assist level by a preset increment when said at least one relation has increased by at least said given percentage until the EMG signal intensity for the given lung volume value is restored to a predetermined, preset value.

52. (New) A neuro-ventilatory efficiency computation device as defined in claim 49, wherein:

the controller decreases the ventilatory assist level by a preset decrement when said at least one relation has decreased by at least said given percentage.

53. (New) A neuro-ventilatory efficiency computation device as defined in claim 49, wherein:

the controller decreases the ventilatory assist level by a preset decrement when said at least one relation has decreased by at least said given percentage until the EMG signal intensity for the given lung volume value is restored to a predetermined, preset value.

54. (New) A neuro-ventilatory efficiency computation device as defined in claim 49, wherein the controller:

increases the ventilatory assist level by a preset increment when said at least one relation has decreased by at least said given percentage; and

decreases the ventilatory assist level by a preset decrement when said at least one relation has decreased by at least said given percentage.

55. (New) A neuro-ventilatory efficiency computation device as defined in claim 49, further comprising:

an alarm generated when said at least one relation has increased or decreased by the given percentage.

56. (New) A neuro-ventilatory efficiency computation device as defined in claim 49, further comprising:

means for manually adjusting the ventilatory assist level.

57. (New) A neuro-ventilatory efficiency computation device as defined in claim 49, wherein:

the calculator determines one of the following values of the EMG signal intensity or lung volume value: a mean of the EMG signal intensity or lung volume value, a median the EMG signal intensity or lung volume value, and a peak the EMG signal intensity or lung volume value.

58. (New) A neuro-ventilatory efficiency computation device as defined in claim 49, wherein the EMG signal intensity is a patient's diaphragm EMG signal intensity.

59. (New) A neuro-ventilatory efficiency computation device as defined in claim 49, comprising:

means for calculating a trend in the EMG signal intensity for a given lung volume value using an adjustable time base.

60. (New) A neuro-ventilatory efficiency computation device as defined in claim 49, comprising:

means for calculating a trend in the lung volume value for a given EMG signal intensity using an adjustable time base.

61. (New) A neuro-ventilatory efficiency computation device as defined in claim 49, comprising:

means for limiting a range of the ventilatory assist level within a safe range.